

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 98-ANE-41-AD; Amendment 39-12671; AD 2002-05-03]

RIN 2120-AA64

Airworthiness Directives; General Electric Company CF6-6, CF6-45, and CF6-50 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes an existing airworthiness directive (AD), that is applicable to General Electric Company (GE) CF6-6, CF6-45, and CF6-50 series turbofan engines, that currently requires revisions to the Time Limits Section of the manufacturer's Instructions for Continued Airworthiness (ICA) to include required inspection of selected critical life-limited parts at each piece-part exposure. This amendment modifies the airworthiness limitations section of the manufacturer's manual and an air carrier's approved continuous airworthiness maintenance program to incorporate additional inspection requirements. A Federal Aviation Administration (FAA) study of in-service events involving uncontained failures of critical rotating engine parts has indicated the need for mandatory inspections. The mandatory inspections are needed to identify those critical rotating parts with conditions, which if allowed to continue in service, could result in uncontained failures. The actions specified by this AD are intended to prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane.

DATES: Effective date April 12, 2002.

ADDRESSES: This information may be examined, by appointment, at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Karen Curtis, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7192, fax (781) 238-7199.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 2000-08-11, Amendment 39-11697 (65 FR 21636, April 24, 2000), which is applicable to GE CF6-6, CF6-45, and CF6-50 series turbofan engines was published in the Federal Register on October 5, 2001 (66 FR 50912). That action proposed to modify the airworthiness limitations section of the manufacturer's manual and an air carrier's approved continuous airworthiness maintenance program to incorporate additional inspection requirements.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Typographical Error

One commenter states that a typographical error exists in the referenced eddy current inspection (ECI) manual task number for HPT Stage 1 disk rim boltholes. The commenter suggests the task number be corrected from 72-53-03-250-052 to 72-53-03-100-053.

The FAA partially agrees. The task number in the proposal is incorrect, however upon further review with the manufacturer, the correct task number is identified as 72-53-03-250-001-053. The task number suggested by the commenter refers to a preparatory cleaning task and not the intended ECI of the disk rim bolthole. The manufacturer will revise Chapter 05-21 of the manual by temporary revision (TR) to include the correct ECI task number, and this final rule is revised accordingly. The review with the manufacturer also found two other task number errors, which have been addressed by TR's and corrections in this final rule.

Time Limits Not Issued Yet

Four commenters approve of the proposal as-written. However, one of those commenters notes that the manufacturer has not yet issued the revisions to the Time Limits section of the engine manual to require the additional inspections in the proposal. The commenter thinks the revisions should already be issued.

The FAA partially agrees. The FAA is aware that the manufacturer has not yet issued revisions to the Time Limits sections of the engine manuals. However, the existing AD and this final rule allows the manufacturer up to 30 days after the effective date of the AD to issue the necessary revisions to the Time Limits sections. Therefore, no action is necessary to address the commenter's observation.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Economic Analysis

The FAA estimates that 730 engines installed on airplanes of U.S. registry would be affected by this AD, that it would take approximately 10 work hours per engine to accomplish the new inspections, and that the average labor rate is \$60 per work hour for a total approximate cost of \$600 per engine. It is further estimated that there will be about 299 shop visits per year that result in piece-part exposure of the additional affected components. Based on these figures, the total cost effect of the additional inspections on U.S. operators is estimated to be \$179,400.

Regulatory Analysis

This final rule does not have federalism implications, as defined in Executive Order 13132, because it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) if promulgated, will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39--AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

Sec. 39.13 [Amended]

2. Section 39.13 is amended by removing Amendment 39-11697 (65 FR 21636, April 24, 2000) and by adding a new airworthiness directive, Amendment 39-12671, to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "av-info.faa.gov"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2002-05-03 General Electric Company: Amendment 39-12671. Docket No. 98-ANE-41-AD.
Supersedes AD 2000-08-11, Amendment 39-11697.

Applicability

This airworthiness directive (AD) is applicable to General Electric Company (GE) CF6-6, CF6-45, and CF6-50 series turbofan engines, installed on but not limited to Airbus Industrie A300 series, Boeing 747 series, and McDonnell Douglas DC-10 series airplanes.

Note 1: This AD applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance

Required as indicated, unless already done.

To prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane, do the following:

Inspections

(a) Within the next 30 days after the effective date of this AD, revise the manufacturer's Time Limits Section of the Instructions for Continued Airworthiness (ICA), and for air carrier operations revise the approved continuous airworthiness maintenance program, by adding the following:

"MANDATORY INSPECTIONS

(1) Perform inspections of the following parts at each piece-part opportunity in accordance with the instructions provided in the applicable manual provisions:

Part nomenclature	Part No. (P/N)	Inspect per engine shop manual chapter
For CF6-6 Engines:		
Disk, Fan Rotor, Stage One	All	72-21-03 Paragraph 2.F. or Paragraph 2.A.B. Flourescent-Penetrant Inspect, and 72-21-03 Paragraph 3 or 3.A. Eddy Current Inspection.

Fan Forward Shaft	All	72-21-05 Paragraph 1. Magnetic Particle Inspection.
Fan Mid Shaft.....	All	72-24-01 Paragraph 1. and Paragraph 2. Magnetic Particle Inspection.
Disk, HPC Rotor, Stage 1	All	72-31-04 Paragraph 1. Fluorescent Penetrant Inspection.
Disk, HPC Rotor, Stage 2..	All	72-31-05 Paragraph 1. Fluorescent Penetrant Inspection.
Spool, HPC Rotor, Stages Three thru Nine.	All	72-31-06 Paragraph 1. Fluorescent Penetrant Inspection.
Disk, HPC Rotor, Stage 10.	All	72-31-07 Paragraph 1. Fluorescent Penetrant Inspection.
Spool, HPC Rotor, Stages 11-13.	All	72-31-08 Paragraph 1. Fluorescent Penetrant Inspection.
Spool, HPC Rotor, Stages 14-16.	All	72-31-08 Paragraph 1. Fluorescent Penetrant Inspection.
HPC Rear Shaft	All	72-31-09 Paragraph 1. and Paragraph 1.E. Fluorescent Penetrant Inspection.
No. 4R Bearing Rotating (CDP) Air Seal.	All	72-31-10 Fluorescent Penetrant Inspection.
No. 4R Bearing Rotating (CDP) Air Seal Support.	All	72-31-10 Fluorescent Penetrant Inspection.
Disk, HPT Rotor, Stage One	All	72-53-03 Paragraph 1. Fluorescent-Penetrant Inspect, and 72-53-03 Paragraph 4. Eddy Current Inspection of the HPTR Disk Rim Boltholes, and 72-53-03 Paragraph 5. Disk Bore Area Eddy Current Inspection.
Disk, HPT Rotor, Stage Two	All	72-53-04 Paragraph 1. Fluorescent-Penetrant Inspect, and 72-53-04 Paragraph 4. Eddy Current Inspection of the Stage 2 HPTR Disk Rim Boltholes, and 72-53-04 Paragraph 5. Eddy Current Inspection of the Stage 2 Disk Inner Boltholes and, 72-53-04 Paragraph 6. Disk Bore Area Eddy Current Inspection.
Disk, LPT Rotor, Stages One thru Five.	All	72-57-02 Paragraph 1. Fluorescent Penetrant Inspection.
LPT Forward Shaft	All	72-57-03 Paragraph 1. Fluorescent Penetrant Inspection.
LPT Rear Shaft	All	72-57-04 Paragraph 1. Fluorescent Penetrant Inspection.
For CF6-45, CF6-50 Engines:		
Disk, Fan Rotor, Stage One	All	Task 72-21-03-230-051 Fluorescent Penetrant Inspection, and Task 72-21-03-250-002-052 Manual Eddy Current Inspection or 72-21-03-250-003-053 Automated Eddy Current Inspection.
Forward Shaft, Fan.....	All	Task 72-21-05-240-056 Magnetic Particle Inspection.
Mid Shaft, Fan	All	Task 72-24-01-240-001-051 Magnetic Particle Inspection.
Disk, HPC Rotor, Stage 1	All	Task 72-31-04-230-001-051 Fluorescent Penetrant Inspection.
Disk, HPC Rotor, Stage 2	All	Task 72-31-05-230-001-051 Fluorescent Penetrant Inspection.
Spool, HPC Rotor, Stages 3-9.	All	Task 72-31-06-230-001-063 Fluorescent Penetrant Inspection.
Disk, HPC Rotor, Stage 10.	All	Task 72-31-07-230-001-051 Fluorescent Penetrant Inspection.
Spool, HPC Rotor, Stages 11-13.	All	Task 72-31-08-230-001-051 Fluorescent Penetrant Inspection 1.

Disk, HPC Rotor, Stage 14.	All	Task 72-31-07-230-001-055 Fluorescent Penetrant Inspection.
Rear Shaft, HPC Rotor	All	Task 72-31-09-230-001-051 Fluorescent Penetrant Inspection.
Spool/Shaft, HPC Rotor, Stages 11-14.	All	Task 72-31-26-230-001-052 Fluorescent Penetrant Inspection.
Rotating (CDP) Air Seal, No. 4R Bearing.	All	Task 72-31-10-230-059 Fluorescent Penetrant Inspection.
Rotating (CDP) Air Seal Support, No. 4R Bearing.	All	Task 72-31-10-230-059 Fluorescent Penetrant Inspection.
Disk, HPT Rotor, Stage One	All	Task 72-53-03-230-001-059 Fluorescent Penetrant Inspect Disk, and Task 72-53-03-250-001-053 Eddy Current Inspection of the HPTR Stage 1 Rim Boltholes, and Task 72-53-03-250-060 Disk Bore Area Eddy Current Inspection.
Disk, HPT Rotor, Stage Two	All	Task 72-53-04-230-001-057 Fluorescent Penetrant Inspect Disk, and Task 72-53-04-250-053 Eddy Current Inspection of the HPTR Stage 2 Rim and/or Inner Boltholes, and Task 72-53-04-250-060 Disk Bore Area Eddy Current Inspection.
Disks, LPT Rotor, Stages 1-4.	All	Task 72-57-02-230-001-051 Fluorescent Penetrant Inspection.
Forward Shaft, LPTR	All	Task 72-57-03-230-001-057 Fluorescent Penetrant Inspection.
Rear Shaft, LPTR	All	Task 72-57-04-230-001-051 Fluorescent Penetrant Inspection.

(2) For the purposes of these mandatory inspections, piece-part opportunity means:

- (i) The part is considered completely disassembled when accomplished in accordance with the disassembly instructions in the manufacturer's engine manual; and
- (ii) The part has accumulated more than 100 cycles in service since the last piece-part opportunity inspection, provided that the part was not damaged or related to the cause for its removal from the engine."

(b) Except as provided in paragraph (c) of this AD, and notwithstanding contrary provisions in section 43.16 of the Federal Aviation Regulations (14 CFR 43.16), these mandatory inspections shall be performed only in accordance with the Time Limits Section of the manufacturer's ICA.

Alternative Methods of Compliance

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Engine Certification Office (ECO). Operators must submit their requests through an appropriate FAA Principal Maintenance Inspector (PMI), who may add comments and then send it to the ECO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

Continuous Airworthiness Maintenance Program

(d) FAA-certificated air carriers that have an approved continuous airworthiness maintenance program in accordance with the recordkeeping requirement of Sec. 121.369(c) of the Federal Aviation Regulations (14 CFR 121.369(c)) must maintain records of the mandatory inspections that result from revising the Time Limits Section of the Instructions for Continuous Airworthiness (ICA) and the air carrier's continuous airworthiness program. Alternatively, certificated air carriers may establish an approved system of record retention that provides a method for preservation and retrieval of the maintenance records that include the inspections resulting from this AD, and include the policy and procedures for implementing this alternate method in the air carrier's maintenance manual required by Sec. 121.369(c) of the Federal Aviation Regulations (14 CFR 121.369(c)); however, the alternate system must be accepted by the appropriate PMI and require the maintenance records be maintained either indefinitely or until the work is repeated. Records of the piece-part inspections are not required under Sec. 121.380(a)(2)(vi) of the Federal Aviation Regulations (14 CFR 121.380(a)(2)(vi)). All other Operators must maintain the records of mandatory inspections required by the applicable regulations governing their operations.

Note 3: The requirements of this AD have been met when the engine shop manual changes are made and air carriers have modified their continuous airworthiness maintenance plans to reflect the requirements in the engine shop manuals.

(e) This amendment becomes effective on April 12, 2002.

Issued in Burlington, Massachusetts, on February 27, 2002.

Mark C. Fulmer,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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